

CLAIMS

What is claimed is:

1. An isolated nucleic acid molecule encoding a polypeptide having PhzO activity selected from the group consisting of:
 - (a) a nucleotide sequence as given in SEQ ID NO:1 from nucleotide 76 to nucleotide 1564 or from nucleotide 89 to nucleotide 1564;
 - (b) a nucleotide sequence encoding a polypeptide having PhzO activity comprising an amino acid sequence of SEQ ID NO:2;
 - (c) a nucleic acid sequence having at least 50% nucleotide sequence identity with SEQ ID NO:1 from nucleotide 89 through nucleotide 1564 and wherein said nucleic acid sequence encodes a polypeptide having PhzO activity;
 - (d) a nucleic acid sequence encoding a polypeptide having an amino acid sequence which has at least 60% sequence identity with SEQ ID NO:2 and wherein said encoded polypeptide has PhzO activity;
 - (e) a nucleic acid sequence which hybridizes under medium or high stringency conditions with the nucleotide sequence of SEQ ID NO:1 from nucleotide 89 through nucleotide 1564 and wherein said DNA sequence encodes a polypeptide having PhzO activity; and
 - (f) a subsequence of (a), (b), (c), (d) or (e) wherein the subsequence encodes a polypeptide fragment which has PhzO activity.
2. The nucleic acid molecule of claim 1 as shown in SEQ ID NO:1.
3. The nucleic acid molecule of claim 1 which is contained in plasmid pUCP2.9XP or plasmid pGEM-PHZO.
4. A nucleic acid construct comprising a nucleic acid molecule of claim 1 operably linked to one or more control sequences which direct the production of a polypeptide having PhzO activity in an expression host.
5. A cell transformed with the isolated nucleic acid molecule of claim 1.

6. A microorganism transformed with the isolated nucleic acid molecule of claim 1.

7. The microorganism of claim 6 wherein the microorganism is a strain of the genera selected from the group consisting of *Escherichia*, *Enterobacter*, *Klebsiella*, *Serratia*, and *Pseudomonas*.

8. An isolated polypeptide having PhzO activity encoded by the nucleic acid molecule of claim 1.

9. An isolated polypeptide having PhzO activity, selected from the group consisting of:

- (a) a polypeptide having an amino acid sequence of SEQ ID NO:2;
- (b) a polypeptide having an amino acid sequence which has at least 60% identity with amino acids 1 to 491 of SEQ ID NO:2;
- (c) a polypeptide encoded by a nucleic acid sequence which hybridizes under medium stringency or high stringency conditions with (i) SEQ ID NO:1 from nucleotide 89 through nucleotide 1564; (ii) a subsequence of (i) of at least 100 nucleotides, or (iii) a complementary strand of (i) or (ii); and
- (d) a fragment of (a), (b) or (c) that has the ability to convert phenazine-1-carboxylic acid to a 2-hydroxylated phenazine.

10. A method for producing a polypeptide having PhzO activity in a recombinant host, comprising the steps:

- a. transforming a host with one or more nucleic acid molecules that encode a polypeptide having PhzO activity; and
- growing said host under conditions which allow biosynthesis of PhzO in said host.